The Hypothalamus Affects Sympathetic Activity During Exercise, Dependent on the Nutritional State

Steffens, A.B.; Dijk, G.J. van

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The Effects of Streptozotocin-induced Diabetes in Rats on Ingestion Patterns of Water, Sucrose and Sodium Saccharin. JAMES C. SMITH. *Department of Psychology, Florida State University, Tallahassee, FL 32306, U.S.A.*

Male Sprague–Dawley rats were given a single i.p. streptozotocin injection (SZ) to induce diabetes. Rats with blood glucose levels below 300 mg/dl were eliminated from the study. The rats were tested in special cages where all licks on either of two drinking tubes and entries into a food chamber were recorded as breaks in IR beams. Ingestion activity was recorded every 6 sec over daily 23 h periods. Both food and water intake by the SZ rats increased. Pattern analysis revealed that these increases were due to a marked increase in daytime ingestion and by a significant increase in ingestion bout length. The patterns of ingestion of sucrose and sodium saccharin are also presented.

Hepatic Osmoreceptors and Water Intake. J. SOBOCIŚKA. *Department of Clinical and Applied Physiology, School of Medicine, Warsaw, Poland.*

The purpose of this study was to find out whether changes of blood osmolality in hepatic portal circulation influence water intake (WI). Eight dogs were chronically implanted with a catheter introduced into the hepatic portal vein. The dogs were made thirsty by i.v. 5% NaCl infusion. WI during and 60 min after intraportal (i.p.) 0·45%, 0·9% and 1·8% NaCl infusions as well as plasma osmolality were measured. The results were compared to those obtained during infusion of the same solutions systemically. WI during i.v. infusion of 0·45% and 1·8% NaCl were $156{\cdot}7 \pm 43{\cdot}4$ ml and $167{\cdot}5 \pm 44{\cdot}8$ ml, respectively. I.p. infusion of 0·45% NaCl decreased WI to $65{\cdot}6 \pm 14{\cdot}5$ ml whereas i.p. 1·8% NaCl increased WI to $206{\cdot}9 \pm 42{\cdot}6$ ml in spite of lack of differences in systemic plasma osmolality. The data support the role of hepatic portal osmoreceptors in control of water intake.

Secular Trends in Development of Obesity in Childhood. THORKILD I. A. SØRENSEN and THOMAS BAYER. *Psykologisk Institut, Kommunehospitalet and Biostatistical Research Unit, University of Copenhagen, Copenhagen, Denmark.*

On the basis of school health record data from a sub-sample of obese draftees and a random sample, we generated logistic regression models predicting development of obesity at draftee age from longitutinal body mass index (BMI) data in childhood. It was possible to predict the rise in prevalence of adult obesity by applying the models incorporating BMI at ages 7 through 13 years to data of the seven birth cohorts (1931, 1941, 1944, 1947, 1953). This indicates that the cause of the steep rise in prevalence of adult obesity is from environmental exposure before and during school ages increasingly affecting the children born after 1941.

The Hypothalamus Affects Sympathetic Activity During Exercise, Dependent on the Nutritional State. A. B. STEFFENS and G. J. VAN DIJK. *Department of Animal Physiology, University of Groningen, Haren, The Netherlands.*

During exercise rats fed carbohydrate (CH) free food show larger increases in plasma norepinephrine (NE) and epinephrine (E) levels than rats fed CH-rich food. After exercise, plasma E declines to basal levels again in both conditions. NE declines only slightly so that the level remains high in CH-free fed rats. The exaggerated sympathetic response in CH-free fed animals is probably mediated by the hypothalamus in response to a change in metabolic feedback in those rats. This serves the release of sufficient glucose and free fatty acids to cover the metabolic needs.